

## MILLIMETERWAVE SPECTRO OF HYDROXYACETONITRILE (HOCH<sub>2</sub>CN) ISOTOPOMERS AND THEIR SEARCH IN ISM

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The detection of isotopomers is an important tool but little used to help understand the chemistry of ISM. Indeed, it is possible to demonstrate that a postulated precursor is not valid when its percentage of deuterium or of <sup>13</sup>C is different: the isotopic effects having little of influence on chemical reactions except when the labeled atom is the reaction center. Hydroxyacetonitrile is related to the aminoacetonitrile detected in 2008 in SgrB2<sup>a</sup> which is a potential precursor of the simplest amino acid, glycine, a compound actively sought in ISM because it is considered as the most characteristic building block of the living. In the synthesis of alpha-aminonitriles in the laboratory, hydroxyacetonitriles are common impurities whose proportion is dependent on the initial concentration of ammonia. Hydroxyacetonitrile is also a precursor of aminoacetonitrile by addition of ammonia but it has not been observed to date in the vicinity of the latter. We recorded and published its millimeter spectrum<sup>b</sup> and the compound was detected a few months later in IRAS16293–2422 B<sup>c</sup>. The spectra of both <sup>13</sup>C and one deuterated isotopomers were recorded in Lille from 150 to 660 GHz. Like the normal species the sample are not commercially available and should be synthesized. The most stable conformer exhibits large amplitude motion due to the two equivalent configurations possible. Due to tunneling effect, each level is split into 0<sup>+</sup> and 0<sup>−</sup> substates. This makes the analysis of the spectra delicate. We will report here the very first spectroscopic results obtained and their search in ISM.

*This project has received financial support from the CNRS through the MITI interdisciplinary programs.*

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<sup>a</sup>Belloche A.; *et al. A&A* **482**, (2008) 179

<sup>b</sup>Margules L.; *et al. A&A* **601**, (2017) A50

<sup>c</sup>Zeng S.; *et al. MNRAS* **484**, (2019) L46